UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

MEMORANDUM

SUBJECT: Five-Year Reviews for the Teledyne and Spectra Physics Superfund Sites, Mountain View, CA

FROM: Tom Kremer, Superfund Policy Advisor
Site Cleanup Branch

THRU: John Kemmerer, Chief
Site Cleanup Branch

TO: Keith Takata, Director
Superfund Division

I. INTRODUCTION

Attached, please find a copy of the first joint Five-Year Review for the subject Superfund Sites prepared by the California Regional Water Quality Control Board, San Francisco Bay Region. A joint Five-Year Review has been conducted because the ground water contamination from these sites has commingled and is being remediated through a common extraction and treatment system. EPA has reviewed their Five-Year Review and adopts their recommendations as written. The Board's Five-Year Review is summarized below.

Because contaminant levels will allow for unlimited use and unrestricted exposure upon achieving ROD cleanup goals, this Five-Year Review is not required by CERCLA (Section 121©) or by Section 300.430(f)(4)(ii) of the NCP. However, because cleanup will take five years or more to attain, this Five-Year Review must be conducted as a matter of Agency policy (OSWER Directive 9355.7-02, "Structure and Components of Five-Year Reviews", 5/31/91. This review (Type 1) is applicable to sites at which construction is complete (OSWER Directive 9355.7-02A, "Supplemental Five-Year Review Guidance", 7/26/94.

II. FIVE-YEAR REVIEW SUMMARY

The Teledyne and Spectra Physics sites are located adjacent to each other, south of Highway 101 in Mountain View. Investigations initiated at Teledyne in 1982 and at Spectra-Physics in 1984 identified VOCs in soil and ground water. VOCs, principally TCE and 1,2 DCE, in ground water are limited to the upper aquifers and have not impacted deeper aquifers used for public water supply. EPA proposed listing Spectra Physics on the National Priority List in 1988 and finalized the listing in 1991. EPA proposed listing Teledyne Semiconductor on the National Priority List in 1984 and finalized the listing in 1987.

The RODs set soil and groundwater cleanup standards for the sites, required operation of a soil vapor extraction system at the Spectra-Physics site, and required on- and off-site ground water extraction and treatment.

The companies have implemented the required remedial actions, operating on- and off-site ground water extraction and treatment and on-site soil vapor extraction systems. The most recent inspection of the sites by Regional Board staff took place on 4/1/98. SVE systems at Spectra-Physics have been effective in removing VOCs from the unsaturated zone, and continue to operate. Ground water systems have been effective in containing the plume and reducing concentrations of contaminants in ground water, and continue to operate. The pilot study on ground water extraction efficiency mentioned in the Regional Board report resulted in one extraction well (E-17) being shut down with the Board's approval. Institutional controls (deed restrictions) have been in place since 1994. No exposure to contaminated groundwater is occurring or expected. Full achievement of cleanup standards remains years away.

III CONCLUSION

I certify that the remedies selected for these sites remain protective of human health and the environment. Based on the expected continuing presence of contamination at these sites at levels which preclude unlimited use and unrestricted exposure, the next Five-Year Review for Teledyne will be written by 3/31/2002 and the next Five-Year Review for Spectra Physics will be written by 9/16/2002.

Approved by: Keith Takata — Date: 9-29-99

Keith Takata, Director
Superfund Division

Attachment: California Regional Water Quality Control Board 5-Year Review

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

U.S. Environmental Protection Agency
Region IX
Hazardous Waste Division
Five-Year Review (Type I)
Teledyne/Spectra-Physics, Mountain View, California

I. Introduction

Authority Statement and Purpose. EPA Region IX conducted this review pursuant to CERCLA section 121(c), NCP section 300.400(f)(4)(ii), and OSWER Directives 9355.7-02 (May 23, 1991) and 9355.7-02 (July 26, 1994). It is a policy review. The purpose of a five-year review is to ensure that a remedial action remains protective of public health and the environment and is functioning as designed. This document will become a part of the Site File. This review (Type I) is applicable to a site at which response is ongoing.

Site Characteristics. Teledyne/Spectra-Physics is a federal Superfund site in the South Bay, overseen by the Board under an agreement with the U.S. EPA. In accordance with its 1991 site cleanup requirements, Teledyne/Spectra-Physics has evaluated the remedial activities performed at the site to determine if the selected cleanup plans are working. The results were submitted in a report titled "*Five-Year Status Report and Effectiveness Evaluation*" dated March 15, 1996.

The Teledyne/Spectra-Physics site is located south of Highway 101 in Mountain View. The offsite area called the North Bayshore Area is situated north of the Teledyne/Spectra-Physics properties and Highway 101. Groundwater contamination from the two properties is commingled and has migrated offsite to the North Bayshore Area.

Investigations initiated at Teledyne in 1982 and at Spectra-Physics in 1984 identified VOCs in soil and groundwater. The main contaminants of concern are TCE and 1,2 DCE. VOCs in groundwater are limited to the upper aquifers and have not impacted deeper aquifers used for public water supply.

Investigations identified VOCs in soil at the Spectra-Physics site that required remediation. Soil remediation at Teledyne was not required. Spectra-Physics installed two soil vapor extraction systems at the site in 1989 and 1992. The two systems have removed a total of 514 pounds of VOCs as of December of 1995. SVE No. 1 was removed in January 1995 because soil cleanup levels were achieved in that area. 1995 Vapor extraction data for SVE No. 2 indicate that VOC concentrations are reaching asymptotic levels.

There are three groundwater extraction systems in the onsite and offsite areas.
Onsite groundwater extraction at the Teledyne property maintains hydraulic control and

remediation of VOC affected groundwater emanating from the Spectra-Physics and Teledyne sites. The onsite groundwater extraction consists of one shallow zone and one intermediate zone groundwater extraction well installed in 1986 and 1988, respectively. The onsite extracted groundwater is treated and discharged to Permanente Creek under an NPDES permit.

Further hydraulic control and remediation of the groundwater plume south of Highway 101 is achieved by the Spring Street Extraction System (SSES), installed in 1991. The SSES consists of five extraction wells in the shallow and intermediate zones. Groundwater extracted is discharged to the sanitary sewer.

The offsite extraction system located in the North Bayshore Area (NBES) was installed in 1990. It consists of 17 extraction wells in the shallow and intermediate zones. The extracted groundwater from this system is discharged to the sanitary sewer also.

II. Discussion of Remedial Objectives

The remedial plan was developed using the nine evaluation criteria defined by CERCLA requirements and considerations. The selected remedies were soil vapor and groundwater extraction and treatment. These are the most cost effective technologies available and they are protective of human health and the environment. The soil cleanup standard is 2.5 ppm total VOCs for the top 10 feet of soil and 0.5 ppm for soils deeper than 10 feet below ground surface. Groundwater cleanup standards are based on USEPA MCLs.

III. ARARs Review

ARARs have not changed for the chemicals of concern.

IV. Effectiveness Evaluation

The groundwater extraction systems have contained groundwater and have somewhat reduced chemical concentrations in groundwater. A summary of their performance from 1990-1995 is summarized in Tables 1 and 2. The effectiveness of groundwater extraction depends on the quantity of VOCs sorbed to the soil matrix, and the rate of VOC transfer from soil matrix to groundwater. The slowly decreasing mass removal rate and the relatively stable VOC plume configuration despite extraction of significant volumes of groundwater, indicate that large quantities of VOCs may be bound to soil matrix and may have diffused into low permeability soil matrix which contain relatively immobile groundwater. The rate of VOC transport from low permeability media is an extremely slow process. Therefore, although groundwater extraction systems can provide source control, groundwater extraction from the NBES especially, is not resulting in any significant retraction of the overall extent of the plume, and may not be resulting in any significant containment above that provided by the natural groundwater flow system. In order to assess groundwater conditions in the northeastern portion of NBES, a pilot study of one-year is proposed. The pilot study will

focus on the changes in hydraulic control and in groundwater chemistry in the area, under modified pumping conditions.

TABLE 1 - Groundwater Extraction Mass Removal Summary (1990-1995)

	Volume of Ext. GW MG	VOC Mass Removal LBS
ONSITE	110	1011
SSES	97	346
NBES	542	2083
TOTAL	**750**	**3440**

TABLE 2 - Groundwater Extraction Efficiency
Lbs of VOCs Removed/MG of Groundwater Extracted

	1990/91	1995
ONSITE	9.3	6.7
SSES	5.4	3.3
NBES	5.5	3.9

V. Summary of Site Visit

Regional Board staff inspected the site most recently in December of 1994. The remediation systems were operating properly. Spectra-Physics was getting ready to remove one of the SVE systems.

VI. Areas of Noncompliance

The discharger has fully implemented the approved remedial action, consistent with the remedial objectives, and is in compliance.

VII. Recommendations

There are no alternative remedial technologies available that would significantly improve the effectiveness of the implemented remedies. The discharger should continue implementation of the approved remedial actions, and should conduct the proposed pilot study to determine whether efficiency of the NBES can be improved, and if so implement measures to improve the efficiency of the NBES, especially in the northern potion of the offsite area as described in the 5-year evaluation report.

VIII. Statement of Protectiveness

I certify that the remedy selected for this site remains protective of human health and the environment.

IX. Next Five-Year Review

The next five-year review will be conducted by March 15, 2001.

Keith Takata, Acting Director
Hazardous Waste Management Division

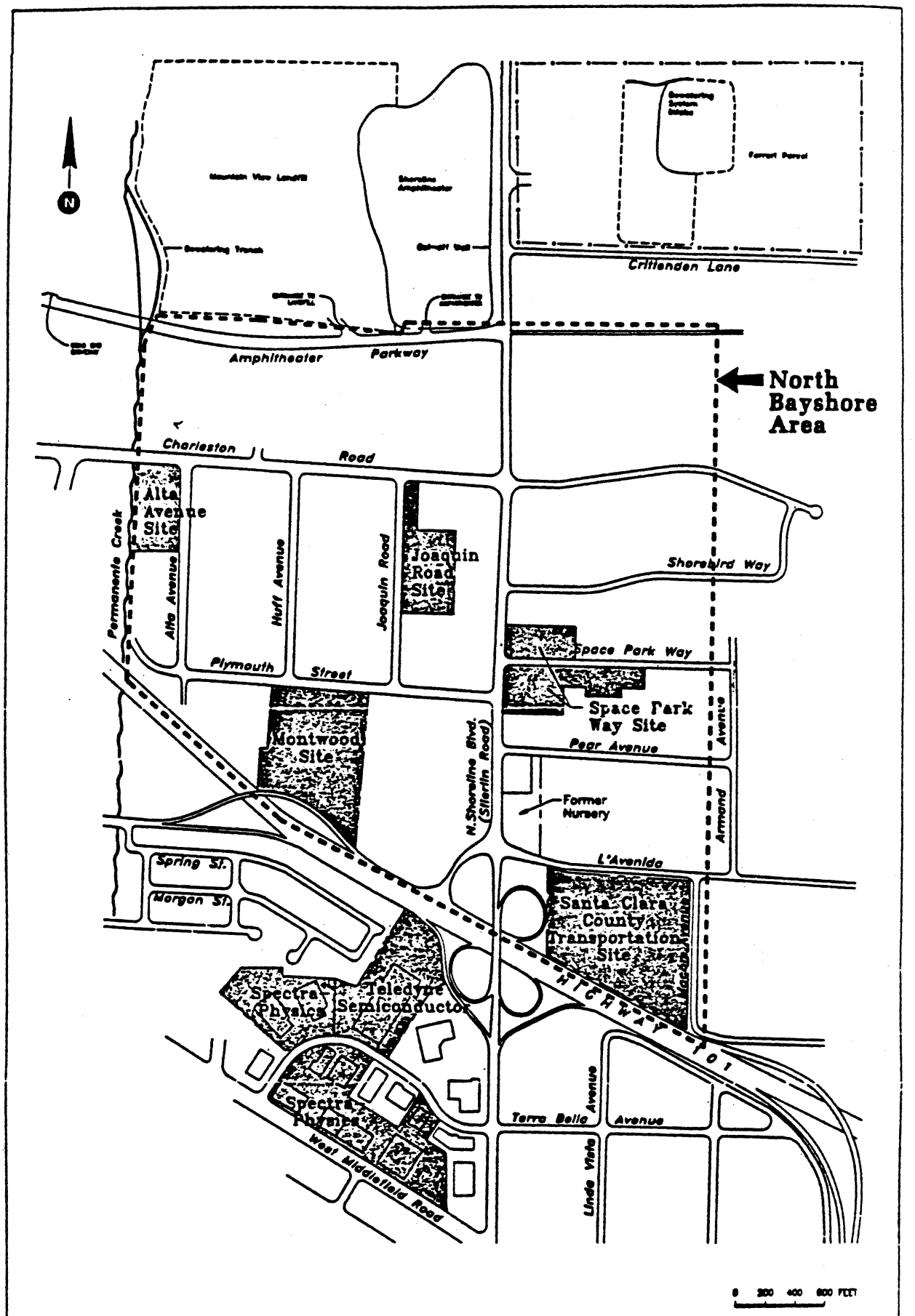

Figure 2 : SITE LOCATION MAP